Up To Date

NASA's Independent Verification &Validation Program
Educator Resource Center Newsletter
Fairmont, West Virginia

April May 2013

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Expanding Your Horizon

AWIS-WV (Association of Women in Science) held their annual outreach event for middle school girls, ***Expanding Your Horizons*** (EYH), at WVU in Morgantown on Saturday, April 20th.

Middle school girls investigated forensic science, aeronautics, the electromagnetic spectrum, robotics, nanoscience and much more.

They also heard women science researchers as guest speakers, made new friends, and created connections with women scientists.

Creating and programming robots was a popular workshop activity.

Does aluminum foil protect from Infrared Radiation? Can an IR Camera locate Bigfoot or ghosts? These were investigated during an IR workshop conducted by the ERC.

Exploring the properties of air and connecting those properties to airplane design.

NASA Pathways

NASA Pathways Programs provide opportunities for students and recent graduates to be considered for Federal employment through:

1. NASA Pathways Intern Employment Program (IEP)
2. NASA Pathways Recent Graduates Program (RGP)
3. NASA Pathways Presidential Management Fellows
4. PMF Program

Check them out at:
http://nasajobs.nasa.gov/studentopps/default.htm

Internships for this fall can be found at:

https://intern.nasa.gov/index.html

Summer Opportunities with the ERC

LABVIEW Trainings Fee:$300

June 3-7 and August 5-9 at the ERC

FIRST Robotics Program (FIRST Tech Challenge or FIRST Robotics Competition) students learn to program their robots using the industry standard program LabVIEW. For those of you who are faculty or students in computer science, engineering, automation, etc. this course is also for you.

To register, contact the training company, Data Services Automation at atb@DSAutomation.com,

TARC Rocketry Free

June 25-27 at the ERC

Learn the skills necessary to launch rockets that are eligible for TARC competitions. An adult mentor and 3 team members spend 3 days learning rocket science as they build and launch a variety of rockets. The knowledge acquired during the training allows them to become the nucleus of a TARC team which they form during the school year.

FLL Robotics at SEMAA Free

June 20-21

Meeting at the SEMAA Labs in Beckley, this short course covers the basics of using an NXT Robot and developing a team to compete at the state FLL tournament held at Fairmont State University on December 7. An adult mentor will attend with 2-3 team members .

To register for TARC or FLL Robotics contact:todd.ensign@ivv.nasa.gov

Inspiring the Next Generation—Bring Your Child to Work Day

NASA'S IV&V Program participated in Bring Your Child to Work Day– Inspiring the Next Generation . The youth explored the work of their parents in particular by spending a half day with them learning what their specific job entails and also spent a half day in the Educator Resource Center exploring what IV&V does in general. By verifying and validating programs written to control robots, designing rocket fins to study the engineering design process and

Youth at ING DAY verifying the robotic build of dancing birds controlled by pulleys and validating the program that will control them.

participating in other STEM activities the youth came to realize the role NASA plays in STEM education in West Virginia and the many career paths to STEM jobs. The participants also had fun challenging each other to launch their rockets at specific targets.

Launching a straw rocket to test fin design.

With more than 37 million youth and adults participating at over 3.5 million workplaces each year, **Take Your Daughters and Sons to Work Day** has increased in popularity each year.

Learning to program NXT robots to go through a maze.

Update from Mars Science Laboratory on Radiation Levels Received During Mars Travel

Measurements taken by NASA's Mars Science Laboratory (MSL) mission as it delivered the Curiosity rover to Mars in 2012 are providing NASA the information it needs to design systems to protect human explorers from radiation exposure on deep-space expeditions in the future.

MSL's Radiation Assessment Detector (RAD) is the first instrument to measure the radiation environment during a Mars cruise mission from inside a spacecraft that is similar to potential human exploration spacecraft. The findings will reduce uncertainty about the effectiveness of radiation shielding and provide vital information to space mission designers who will need to build in protection for spacecraft occupants in the future.

The findings, which are published in the May 31 edition of the journal Science, indicate radiation exposure for human explorers could exceed NASA's career limit for astronauts if current propulsion systems are used.

Two forms of radiation pose potential health risks to astronauts in deep space. One is galactic cosmic rays (GCRs), particles caused by supernova explosions and other high-energy events outside the solar system. The other is solar energetic particles (SEPs) associated with solar flares and coronal mass ejections from the sun.

Radiation exposure is measured in units of Sievert (Sv) or milliSievert (one one-thousandth Sv). Long-term population studies have shown exposure to radiation increases a person's lifetime cancer risk. Exposure to a dose of 1 Sv, accumulated over time, is associated with a 5 percent increase in risk for developing fatal cancer.

NASA has established a 3 percent increased risk of fatal cancer as an acceptable career limit for its astronauts currently operating in low-Earth orbit. The RAD data showed the Curiosity rover was exposed to an average of 1.8 milliSieverts of GCR per day on its journey to Mars. Only about 5 percent of the radiation dose was associated with solar particles because of a relatively quiet solar cycle and the shielding provided by the spacecraft.

"In terms of accumulated dose, it's like getting a whole-body CT scan once every five or six days," said Cary Zeitlin, a principal scientist at the Southwest Research Institute (SwRI) in San Antonio and lead author of the paper on the findings. "Understanding the radiation environment inside a spacecraft carrying humans to Mars or other deep space destinations is critical for planning future crewed missions."

Recent Events

Students from Doddridge County enjoying the Kindernauts kit.

Above : a special nook in which to explore outer space

Below: using a glove box to accomplish an experiment

Above: Local students with Dr. Tom Evans of the WV Robotic Technology Center and Jaime Ford of the ERC toured the center as part of a robotics workshop.

Left: the same group of students also came to the ERC for a rocketry workshop.

East Park also used the Kindernauts kit.

Left: astronauts celebrating a successful landing on the moon

Center: Who doesn't love the planet Saturn?

Below: Students learn about the three very different types of spacesuits in the Kindernauts Kit with their pre-service teacher , Nicole Culp.

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Links to Student Competitions

First Lego League Robotics:

http://www.firstlegoleague.org/

Real World Design Challenge:

http://www.realworlddesignchallenge.org/

Team America Rocketry Challenge:

http://rocketcontest.org/

Green Aviation Contests:

http://aero.larc.nasa.gov/competitions.htm

Upcoming Events:

June 3 GPS Center Schools Beckley
June 3-7 LABVIEW Training at the ERC
June 4 STARLAB Fayette County
June 10 Aviation Student Workshop for Boys and Girls Club at ERC
June 10 Basic Rocketry Boys and Girls Club staff Berkley County
June 12 Carnegie Dinosaurs and Echo the Bat Monongalia County
June 20-21 FLL Summer Camp at SEMAA Beckley
June 25-27 TARC Workshop at ERC
July 10-13 StarQuest at NRAO Green Bank
July 12-25 BSA National Jamboree
August 5-9 LABVIEW Training at the ERC

Quotes of the Month: *Nature*

Look deep into nature, and then you will understand everything better.
Albert Einstein

He is richest who is content with the least, for contentment is the wealth of nature.
Socrates

And this, our life, exempt from public haunt, finds tongues in trees, books in the running brooks, sermons in stones, and good in everything.

Where in WV is the ERC?

April May Workshops in Red

April May Equipment Loans in Blue

To schedule a workshop:

Contact the ERC by calling 304-367-8436 or emailing:

pamela.casto@ivv.nasa.gov

To schedule equipment for loan: First check the equipment loan calendar on the ERC website to see if the equipment is available for the dates desired. Then email Nicole Culp who will schedule the dates.

nicole.culp@ivv.nasa.gov

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NASA IV&V Facility Educator Resource Center

And Twitter: @NASAIVV_ERC